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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 05-1079

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Signature _____

Typed or printed name _____

Application Number	Filed
10/561349	12/19/2005

First Named Inventor: Parkinson

Art Unit	Examiner
2622	Quang V. Le

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 32901.
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

/A. Blair Hughes/
Signature

A. Blair Hughes
Typed or printed name

312-913-2123
Telephone number

March 30, 2010
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

(Case No. 05-1079)

In the Application of:	)	
	)	
Nicholas James Parkinson et al.	)	Examiner: Quang V. Le
	)	
Serial No. 10/561,349	)	
	)	Group Art Unit: 2622
Filed: December 19, 2005	)	
	)	Conf. No. 9867
Title: Image Processing System	)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

PRE-APPEAL REQUEST FOR REVIEW

I. BACKGROUND

Claims 1-11 and 13-14 are pending in the application. Claim 1 is the sole independent application claim. Claims 1-4, 7-9 and 13-14 are finally rejected for being obvious over Burgess in view Hardin. Claims 5-6 and 10-11 stand finally rejected for being obvious over Burgess in view of Hardin and further in view of Vock (claims 5-6); in view of Zhdanov (claim 10); and in view of Martin (claim 11).

II. TRAVERSE OF THE OBVIOUSNESS REJECTIONS

All patentability positions below will be discussed in the context of independent claim 1. If any of Applicant's patentability positions below regarding claim 1 are deemed meritorious, then all remaining claims, which depend directly or indirectly upon claim 1, must also be allowed.

It is the examiner's position that Burgess discloses all of the features of independent claim 1 except elements disclosed by Hardin including (1) a plurality of linear arrays of detectors spaced substantially parallel to one another to image a plurality of areas of interest in a scene; and (2) a system comprising a signal processor for detecting images received by the plurality of arrays and determining direction and speed of movement detected. The examiner's rejection is

traversed because the cited prior art does not disclose all claim 1 features and because the examiner's reference combination is illogical.

A. The cited art does not teach the use of a "plurality of linear arrays"

Claim 1 is non-obvious because the cited prior art does not disclose an image processing system including a "plurality of linear arrays of detectors" as required by claim 1. The examiner admits that Burgess teaches only a single linear detector array but alleges that the image sensor in each of the digital cameras in Hardin is "... a composition of linear detector arrays in both vertical and horizontal directions". (Final Rejection at p. 2). The examiner's position is without merit.

The examiner's assertion that it is well known in the art that the image sensor in the digital cameras in Hardin is a composition of linear detector arrays in both vertical and horizontal directions is factually incorrect. That is because "linear image sensors" and "area image sensors" are distinct types of imaging sensors and would be understood by the skilled person to be different. Specifically, linear image sensors have pixels aligned along a central axis whereas area image sensors have the pixels arranged in a rectangular (rows × columns) array pattern. Linear image sensors require relative motion between the sensor and the object being scanned while area image sensors do not. For example, when using a linear imaging sensor the object is scanned one line at a time, and can then be reconstructed one line at a time using knowledge of the relative motion between the object and the sensor. Area image sensors do not require this motion and instead employ electronic scanning to provide video data which represents light intensity at each of the scanned pixel locations within the sensor. Thus one skilled in the art at the time of the invention would understand that an area image sensor is not a linear array.

This distinction goes to the heart of the present invention in terms of the way the claimed image processing apparatus operates. In the claimed invention, relative movement of a vehicle past a stationary vertical linear array effects scanning of the vehicle, thereby obviating a matrix of sensor pixels and associated electronic scanning means. Indeed, a close review of Burgess and Hardin reveals that a single linear image sensor is used in Burgess and area image sensors are used in Hardin. For example, Burgess makes specific reference to a linear array 11 comprising a 128 element charged coupled device (CCD) unit. (Burgess, p. 1, col. 2, lns 102–04). In

contrast, Hardin uses two video cameras each having a pixel matrix array of light sensitive devices such as a CCD. (Hardin, col. 4, lines 61 – 63). Hardin also teaches that the pixel array is scanned electronically in horizontal or vertical lines to provide video data which represents light intensity at each scanned pixel location and that video from left and right hand cameras in Hardin is captured simultaneously. (Id at col. 4, lns 61–65 & col. 7, lns 22–23). Although Hardin processes target images from the pixel matrix arrays by comparing a plurality of pairs of video lines from the video cameras, nowhere does Hardin disclose linear detector arrays. Thus, the combination of Burgess and Hardin does result in a device including a "plurality of linear detector arrays".

B. The art does not disclose "a plurality of areas of interest in a scene"

Independent claim 1 is further non-obvious and patentable because the cited prior art does not disclose or suggest arrays of detectors arranged to image "a plurality of areas of interest in the scene". The examiner takes the position – at pages 3-4 of the Final Rejection - that Figure 4a of Hardin discloses image sensors that capture a plurality of "areas of interest" in a scene. It should be noted that the examiner has changed Figure 4a in the Final Rejection to include arrows adjacent to the added term "areas of interest."

The examiner's rejection is without merit because one of ordinary skill in the art would not consider – based upon reading Hardin – that the areas identified by the Examiner in Hardin Figure 4a are "areas of interest in the scene". Indeed, the skilled person would not understand the alleged identified areas in Hardin to have any importance. The examiner justifies identifying the areas as "areas of interest" by suggesting that it is obvious from Figure 4a that different columns of the image sensor capture a different point on the plane of the subject. However, this is true for any optical system which images a plurality of points in a subject/object plane onto a plurality of points or pixels in an image plane without imparting any particular significance to the points. Indeed, following Examiner's arbitrary approach, all areas within the subject/object plane would be identified as "areas of interest" and that is clearly not the intention in the present invention or even Hardin.

The presently claimed "areas of interest" have particular significance since the areas are essential in the determination of the speed and direction of movement of objects as they move successively through each of said areas of interest. By way of support, page 2, lines 13 - 21 of

the specification explains that the direction of movement of the target can be determined by looking at the order in which the target passes the linear arrays. Similarly, the speed of motion of the object can be determined by looking at the time difference between the target crossing the field of view of the linear arrays. To this end, the field of view of each linear detector array, i.e. the plurality of areas of interest, are generally different parts of the scene. (See specification at p. 2, lines 19 – 21). In contrast, the alleged areas of interest in Hardin have no significance since Hardin captures the alleged areas of interest simultaneously (not sequentially) and determines range to the target using trigonometry and not the order in which the target passes through the areas of interest or the time difference there-between.

Based upon this understanding of the claimed invention, it is clear that the examiner's alleged areas of interest in Figure 4a are either incompatible with the present invention as understood by the skilled person, or incompatible with the teaching in Hardin. These inconsistencies demonstrate that the claimed "areas of interest" are not present in the prior art.

C. The art does not disclose determining "direction of speed and movement"

The image processing system of independent claim 1 is further non-obvious because the prior art does not disclose a signal processor "for detecting images received by the plurality of arrays and determining direction and speed of movement detected". The examiner cites column 12, lines 61-65 of Hardin for suggesting a device that can differentiate between receding and approaching targets. However, it is not clear whether the apparatus taught in Hardin is capable of determining direction of movement of the target other than merely to establish that the target is receding from or approaching the apparatus. Accordingly, the examiner is incorrect in asserting that "... although not explicitly disclosed how the system detects the direction of the movement, it is inherent that the direction of movement should fall out from the calculation of speed".

D. The examiner's grounds for combining references is not logical

MPEP §§ 2142 and 2143 places on the examiner the burden to establish a *prima facie* case of obviousness by clearly articulating reasons with rational factual underpinnings to support a conclusion of obviousness. The examiner has not met the burden of establishing a prima facie case of obviousness here at least because the reasoning for combining the references is illogical.

The examiner justifies the combination of Burgess and Hardin on the basis that it would "provide an image system that not only capture and save images of vehicles passing through an

observed scene but [it would] also measure the direction and speed of the vehicle" and that "[s]uch feature is extremely useful for security check stations." (See p. 8 of the Final Rejection). The examiner's basis for combining the references appears to be fabricated in hindsight with the applicant's invention in mind at least because the examiner's reasoning is not rational or logical. In particular, the examiner has not shown that one skilled in the art at the time of the invention would understand that "security check stations" were in need of the claimed systems at the time of the invention. Further, neither the cited references nor the pending application is directed to systems that are used in security check stations. Therefore, the cited references and the instant application do not support the examiner's reasoning and the examiner has not provided logical independent reasoning for the combination. Indeed, the examiner has not articulated why a person of ordinary skill in the art who was interested in improving systems related to security check stations would have consulted the cited prior art in the first place since, as noted above, neither reference is related to systems used in security check stations. For this reason as well, all pending claims are non-obvious and patentable.

The examiner's combination is also illogical because both Burgess and Hardin teach away from their combination. Burgess teaches away from using conventional pixel matrix array video cameras of the type used in Hardin because of the heavy cables and large signal bandwidth required. (Burgess, p. 1, col. 1, lines 18 – 24). Hardin teaches away from speed measuring systems - such as presently claimed - which determine direction and speed of motion of an object in a scene by acquiring images at different times and comparing the relative sizes of the images in the field of view as a function of time. (See, for example, Hardin, col. 1, lines 31 – 40).

Finally, even if one of ordinary skill in the art combined the teachings of Burgess and Hardin, the present invention would not be achieved. That is because Hardin does not teach arrays of detectors arranged to image a plurality of areas of interest in the scene. Rather, Hardin images only one area of interest in the scene and the skilled person who incorporated pixel matrix sensor arrays of Hardin into Burgess would not arrive at the claimed invention.

McDonnell Boehnen Hulbert & Berghoff LLP

Date: March 30, 2010

By: /A. Blair Hughes/
A. Blair Hughes
Reg. No. 32,901
312-913-2123